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Monocarboxylate Transporter4 (MCT4, SLC16A3)

Cat.No. 356 405; Polyclonal Guinea pig antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 μ g specific antibody, lyophilized. Affinity purified with the immunogen. Albumin and azide were added for stabilization. For reconstitution add 50 μ l H ₂ O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C to -80°C until use. Antibodies should be stored at +4°C when still lyophilized. Do not freeze! For detailed information, see back of the data sheet.
Applications	WB: 1: 1000 up to 1: 2000 IP: not tested yet ICC: not tested yet IHC: not tested yet IHC-P: 1: 200 up to 1: 1000
Immunogen	Synthetic peptide corresponding to AA 447 to 459 from rat Monocarboxylate transporter 4 (UniProt Id: O35910)
Reactivity	Reacts with: rat (O35910), human (O15427), mouse (P57787). Other species not tested yet.
Specificity	Monocarboxylate transporter 4

TO BE USED IN VITRO / FOR RESEARCH ONLY
NOT TOXIC, NOT HAZARDOUS, NOT INFECTIOUS, NOT CONTAGIOUS

Background

The proton-linked transport of monocarboxylates across the plasma membrane plays a critical role in the metabolism and pH regulation of most cells. Fourteen different monocarboxylic acid transporters (MCTs) have been identified, so far. Only four of them (MCT 1-4) have been shown to actively transport the monocarboxylates pyruvate and lactate across the cell membrane.

MCT 1, also referrred to as **Slc16 a1**, and MCT 2 show differential expression in astrocyte subpopulations and blood vessels in the mammalian brain.

MCT4 is highly expressed in glycolytic cells, such as skeletal muscle fibers, astrocytes, leukocytes, chondrocytes, and some mammalian cell lineages.

Selected General References

Deficiency in monocarboxylate transporter 1 (MCT1) in mice delays regeneration of peripheral nerves following sciatic nerve crush.

Morrison BM et al. Exp. Neurol. (2015) PubMed:25447940

 $Regulation\ of\ Mct1\ by\ cAMP-dependent\ internalization\ in\ rat\ brain\ endothelial\ cells.$

Smith JP et al. Brain Res. (2012) PubMed:22925948

Studies on the DIDS-binding site of monocarboxylate transporter 1 suggest a homology model of the open conformation and a plausible translocation cycle.

Wilson MC et al. J. Biol. Chem. (2009) PubMed:19473976

Expression of the monocarboxylate transporter MCT1 in the adult human brain cortex.

Chiry O et al. Brain Res. (2006) PubMed:16403470

Monocarboxylic acid transporters, MCT1 and MCT2, in cortical astrocytes in vitro and in vivo.

Hanu R et al. Am. J. Physiol., Cell Physiol. (2000) PubMed:10794666

cDNA cloning of MCT1, a monocarboxylate transporter from rat skeletal muscle.

Jackson VN et al. Biochim. Biophys. Acta (1995) PubMed:7548134

The role of charged residues in the transmembrane helices of monocarboxylate transporter 1 and its ancillary protein basigin in determining plasma membrane expression and catalytic activity.

Manoharan C et al. Mol. Membr. Biol. () PubMed:17127621

Access the online factsheet including applicable protocols at https://sysy.com/product/356405 or scan the QR-code.



FAQ - How should I store my antibody?

Shipping Conditions

 All our antibodies and control proteins / peptides are shipped lyophilized (vacuum freezedried) and are stable in this form without loss of quality at ambient temperatures for several weeks.

Storage of Sealed Vials after Delivery

- Unlabeled and biotin-labeled antibodies and control proteins should be stored at 4°C before reconstitution. They must not be stored in the freezer when still lyophilized!
 Temperatures below zero may cause loss of performance.
- Fluorescence-labeled antibodies should be reconstituted immediately upon receipt. Long term storage (several months) may lead to aggregation.
- **Control peptides** should be kept at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- The storage freezer must not be of the frost-free variety ("no-frost freezer"). This cycle
 between freezing and thawing (to reduce frost-build-up), which is exactly what should be
 avoided. For the same reason, antibody vials should be placed in an area of the freezer that
 has minimal temperature fluctuations, for instance towards the back rather than on a door
 shelf.
- Aliquot the antibody and store frozen (-20°C to -80°C). Avoid very small aliquots (below 20 µl)
 and use the smallest storage vial or tube possible. The smaller the aliquot, the more the stock
 concentration is affected by evaporation and adsorption of the antibody to the surface of the
 storage vial or tube. Adsorption of the antibody to the surface leads to a substantial loss of
 activity.
- The addition of glycerol to a final concentration of 50% lowers the freezing point of your stock and keeps your antibody at -20°C in liquid state. This efficiently avoids freeze and thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

• Store at -20°C to -80°C.

Monoclonal Antibodies

- Ascites and hybridoma supernatant should be stored at -20°C up to -80°C. Prolonged storage at 4°C is not recommended! Unlike serum, ascites may contain proteases that will degrade the antibodies.
- **Purified IgG** should be stored at -20°C up to -80°C. Adding a carrier protein like BSA will increase long term stability. Many of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Polyclonal Antibodies

- Crude antisera: With anti-microbials added, they may be stored at 4°C. However, frozen storage (-20°C up to -80°C) is preferable.
- Affinity purified antibodies: Less robust than antisera. Storage at -20°C up to -80°C is
 recommended. Adding a carrier protein like BSA will increase long term stability. Most of our
 antibodies already contain carrier proteins. Please refer to the data-sheet for detailed
 information.

Fluorescence-labeled Antibodies

• Store as a liquid with 1:1 (v/v) glycerol at -20°C. Protect these antibodies from light exposure.

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All our purified antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add
 the amount of deionized water given in the respective datasheet. If higher volumes are
 preferred, add water as mentioned above and then the desired amount of PBS and a
 stabilizing carrier protein (e.g. BSA) to a final concentration of 2%. Some of our antibodies
 already contain albumin. Take this into account when adding more carrier protein.
 For complete reconstitution, carefully remove the lid. After adding water, briefly vortex the
 solution. You can spin down the liquid by placing the vial into a 50 ml centrifugation tube filled
 with paper.
- If desired, add small amounts of azide or thimerosal to prevent microbial growth. This is especially recommended if you want to keep an aliquot a 4°C.
- After reconstitution of fluorescence-labeled antibodies, add 1:1 (v/v) glycerol to a final
 concentration of 50%. This lowers the freezing point of your stock and keeps your antibody in
 liquid state at -20°C.
- Glycerol may also be added to unlabeled primary antibodies. It is a suitable way to avoid freezethaw cycles.
- Please refer to our tips and hints for subsequent storage of reconstituted antibodies and control peptides and proteins.